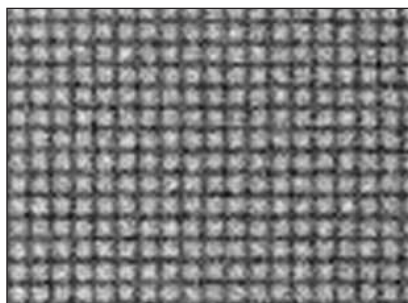


NIF Target Area Building Taking Shape. The NIF Target Area Building forming is complete to the +33-foot level. The concrete floor has been poured to the +17.5-foot level. The target chamber is scheduled to be moved into the center of the Target Area Building in June of this year. The photo below shows the structure as seen from above.



The NIF Target Area Building in March 1999.

Bent X-Ray Crystal Microscope. When microscopes get close enough to "see" a typical high-energy laser-fusion experiment with adequate resolution, they are easily damaged. In March, we began testing of a spherically bent, x-ray crystal microscope designed to minimize this problem. These experiments, done on the Nova laser in collaboration with Naval Research Laboratories, used a 2-mm-aperture, quartz 2023 crystal to image a gold-wire resolution grid, using a quasi-monochromatic x-ray line at 4.53 keV as a back-light source. Result of offline tests indicate a resolution (i.e.,



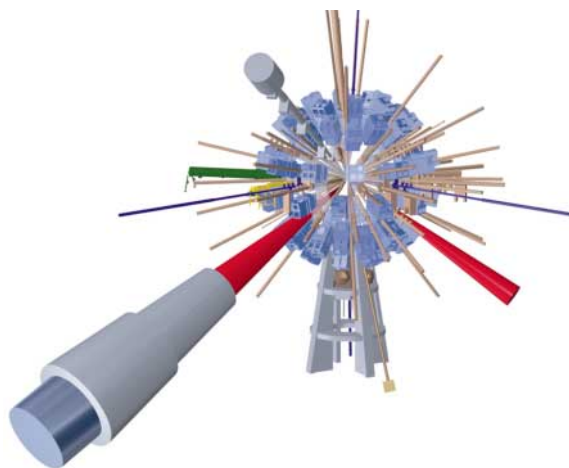
Test image of a 25-μm-period grid successfully obtained with the bent-crystal microscope.

10 μm edge response) in agreement with predictions. The Nova tests showed similar performance but with less contrast. Future tests at higher energies and brightness will examine the microscope's potential application to NIF experiments.

Preamplifier Module Testing. We have recently completed the first in a series of 50-shot performance experiments on NIF's engineering prototype preamplifier module (PAM) laser system. The PAM's role is to initially shape and amplify the beam before it is injected into the main amplifier system. NIF target experiments will require from the PAM extremely good shot-to-shot pointing stability ($\pm 0.81 \mu\text{rad}$ for a 372-mm beam) and energy stability (3%); the purpose of these experiments was to demonstrate routine PAM operation at a repetition rate of one shot every ten minutes for an eight-hour period. The measured energy stability of the PAM was 2.6%, meeting the NIF specification. The measured pointing stability of $\pm 1.4 \mu\text{rad}$ has revealed several needed mechanical improvements in the PAM, specifically more robust optics mounts and nitrogen/air flow inside the PAM enclosure. These improvements are under way.

Workshop Aimed at Target Diagnostics of Large Fusion Lasers.

A workshop on Target Diagnostics for Large Laser Fusion Facilities was held in Monterey, California, in early March. Attendees representing the national laboratories, universities, and other institutions reviewed core target diagnostics (i.e., the first to be installed on NIF) and their specifications. The groups then considered what additional diagnostics are needed to complete the NIF objectives and identified the research and development needed for these additional diagnostics. The groups proposed who might undertake various aspects of the research and development. Results are available from the ICF/NIF Program office.



The NIF's target chamber diagnostics are the topic of nationwide discussion.